A LOOK AT WISCONSIN'S FORESTS

Ownership of Wisconsin's Forests

The majority of forestland in Wisconsin is owned by individuals and families. The percentages of ownership have remained relatively constant since 1956.

Ownership Type	Percent
Private (i.e. family, tribal, corporation)	70
County & Municipal	14
National Forest	9
State	6
Other Federal	1

DNR photo by Jeff Martin

Recreation

Wisconsin State Forests provide a wide variety of recreational opportunities including camping, hiking, picnicking, canoeing, swimming, skiing, snowshoeing, boating, off-road biking, backpacking, horseback riding, fishing, hunting and ATV and snowmobile trails. Recreational use of Wisconsin's forests continues to grow and the types of uses continue to diversify. There is much to explore and enjoy in Wisconsin's forests.

DNR photo by Jeff Martin

Wood Products

The forest products industry supports Wisconsin by providing paper, lumber, furniture, food and much more. Creating and utilizing sustainable practices and technologies will help Wisconsin stay competitive in the diverse forest products industry and provide jobs for citizens. Currently, Wisconsin's forest products industry provides one in eight manufacturing jobs. For every 10 jobs in the forest products industry, an additional 16 jobs are supported in other sectors of the state's economy.

Wisconsin's Forest Products Industries (2009 figures)

Number of Companies	1,356
Number of Employees	68,846
Total Payroll	$3,059,383,000
Value of Shipments	$20,467,800,000

Biomass

photo by Steve Schmieding, USDA Forest Service, Forest Products Laboratory

There is a growing industry in using parts of the tree that were once considered waste, such as woody debris, leaves, branches or sawdust to meet Wisconsin's increasing demand for energy and fuel. New projects are underway to turn these materials, called biomass, into composites to heat our homes or power our cars.

It is estimated that the total live-tree biomass for the forests of Wisconsin exceeds 600 million dry tons. The northern 23 counties contain 69 percent of this biomass, while the more populated counties in the southeast contain 8 percent.

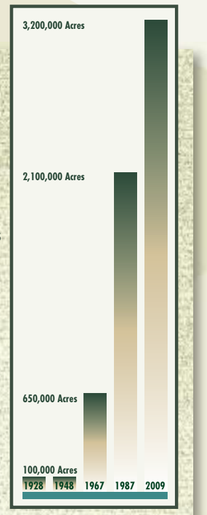
Tax Law Acreage

Wisconsin's forest tax law programs encourage sustainable forest management through decreased property taxes on enrolled lands. The program incorporates landowner objectives, timber management, wildlife management, water quality and the environment as a whole to create healthy and productive forests.

The Forest Crop Law began in 1928 and the Woodland Tax Law was added in 1954. The only program now open for enrollment, the Managed Forest Law, was initiated in 1986. Today, over 3.2 million acres of Wisconsin forest land are managed under the tax laws.

FOREST FACT

Acres enrolled in Wisconsin's forest tax law programs over time



Threatened and Endangered Species

Wisconsin's forests are home to numerous rare plants and animals. Some species are formally protected as "threatened" or "endangered." Others are considered at risk and in need of conservation such as those identified in Wisconsin's Wildlife Action Plan. Many rare species in Wisconsin rely on one or more high-quality forest habitats. For example, extensive deciduous forests are used by Acadian Flycatchers, floodplain forests often contain Red-shouldered Hawks and wood turtles, older northern hardwood forests support American martens and Northern Goshawks, and cedar swamps harbor the diminutive Calypso orchid.

Wisconsin is a stronghold for the federally endangered Karner blue butterfly, and numerous partnerships have been formed to ensure the continued protection of this species through sustainable management.

photo by Steve Apps

Forest Wildlife

photo by Bob Queen

The variety of forest ecosystems in Wisconsin support a great diversity of wildlife species. However, different species prefer different habitats and are therefore affected by changes in the forest. The early successional forests such as aspen that colonize areas after a major disturbance (harvesting, fire, windthrows, etc.) are important for grouse, deer and a variety of other species. Forests that succeed to more shade-tolerant trees, such as sugar maple, favor other wildlife species. For example, many neotropical, migratory birds prefer habitats with trees of many ages and closed forest canopies.

State Nursery Program

DNR photo

Wisconsin's forest nursery program has been a leader in the stewardship of natural resources since 1911, producing over 1.5 billion tree and wildlife shrub seedlings. Reforestation efforts utilizing state nursey stock have been instrumental in creating and enhancing the supply of raw material for the forest industry in Wisconsin. In addition, these forests improve wildlife habitat, prevent soil erosion, conserve energy and provide aesthetic beauty.

The state currently operates three forest tree nurseries: the Wilson State Nursery in Boscobel; the Griffith State Nursery in Wisconsin Rapids; and the Hayward State Nursery in Hayward. Annually, between 18 and 20 million seedlings are produced for reforestation projects on state, county, industrial and private lands.

It would be difficult to image a world without trees. For the people of Wisconsin, trees and forests are part of our everyday lives. Forests provide habitat for wildlife, recreational opportunities for residents and visitors alike and are a major part of our state's economy. They also protect and enhance our air, water and soils. Wisconsin trees touch our lives daily through the products they provide and the many ways they improve the quality of life in our backyards, on our streets and in our parks and woodlands.

The forests we enjoy today are the result of many decades of exploration, change, hard work and management. Over the years we have learned the important role that proper management plays in creating a healthy, sustainable forest. Today, foresters and other professionals devote their lives to protecting and managing this magnificent natural resource.

The Department of Natural Resources' Division of Forestry works in partnership to protect and sustainably manage Wisconsin's forests to supply a wide range of ecological, economic and social benefits for present and future generations. We face many challenges including the impacts of invasive species, climate change, changing land use and the global economy. Ensuring sustainable forests as we face these challenges requires the help and cooperation of each Wisconsin citizen, now and into the future.

This publication offers a glimpse of the many forest-related topics that touch our lives each day. As you read, I encourage you to imagine what your life would be like if it were not for trees. I think you will agree that working together to sustain our forests is one key to a pleasurable and prosperous life in the great state of Wisconsin.

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DNR photo

DNR photo

Introduction

Throughout Wisconsin's history, forests have played a major role in supporting the people who lived here. Over time, these forests have changed with the human demands placed on them, but they still remain an invaluable facet of our ecological, economical and social well-being.

Nearly 11,000 years ago, Wisconsin's native inhabitants practiced early forms of forest management. They used fire to encourage the growth of forest vegetation that would attract large game species such as deer and elk. They also utilized agricultural methods, such as planting and controlled burning, to grow food.

When Europeans arrived in the 1600s, nearly three quarters of the state was forested. As settlement began to grow in the 1800s, so too did the demand for resources. Many of the southern forests were cut or burned and converted to agricultural fields. By the late 1860s logging had become an important component of the state's economy, and by 1893 Wisconsin was a world leader in lumber production.

Unfortunately, by the 1930s most of the valuable timber in the northern part of the state had been removed. Logging companies began to sell the barren, cutover tracts of land to immigrant farmers. Much of this land was unfit for agriculture, and many families went bankrupt and abandoned their plots.

As citizen foresters gained a better understanding of Wisconsin's natural resources, they realized that management methods needed to be altered. In the 1920s and 30s a new concern for conservation and informed decision-making arose. Much of northern Wisconsin was converted back to forest land, and state monies were allocated to proper management of public and private forests. Many years passed before the cutover forests recovered sufficiently for harvest, but by this time there was a firm knowledge of sound management practices.

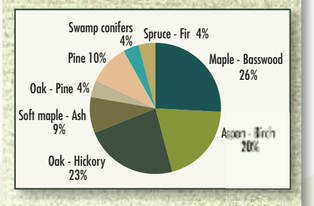
The dramatic recovery of Wisconsin's forests from the cutover, abandoned land of the early 1900s to the high value forest of today is the result of many years of hard work and investment. Ecological, economic, and social benefits have grown with the growing forest. This publication is dedicated to the many citizens, conservation leaders, foresters and other land managers whose tireless efforts shaped the forest we all enjoy today.

A LOOK AT WISCONSIN'S FORESTS

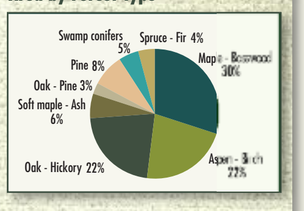
Area of Forest by Type

The most abundant forest type groups in Wisconsin are hardwood forest types, particularly maple-basswood, aspen-birch and oak-hickory. Among the hardwood forest type groups, aspen-birch has been steadily declining, most recently, from 3.4 million acres in 1996 to 3.2 million acres in 2007. Aspen is a "pioneer" species that is first to take over following disturbances such as windstorms, fire or human activity. As the aspen ages and dies or is harvested, it is replaced by species that are more shade tolerant, such as sugar maple or basswood. This "successional" trend is evident in the declining acreage of the aspen-birch type and the increasing acreage of later successional forest types. Forest managers build upon forest succession to develop or maintain diverse patterns of forest types, valuable timber species and habitat for wildlife.

2007 - Percentage of Timberland Area by Forest Type

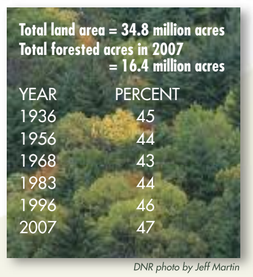


1996 - Percentage of Timberland Area by Forest Type



Total land area = 34.8 million acres
Total forested acres in 2007 = 16.4 million acres

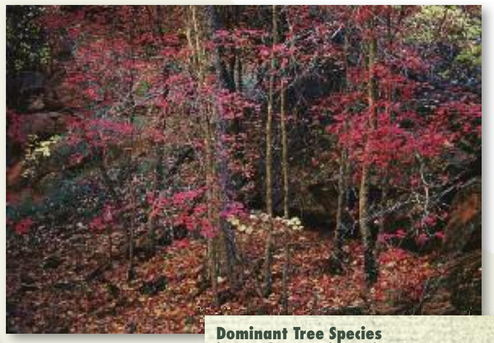
YEAR	PERCENT
1936	45
1956	44
1968	43
1983	44
1996	46
2007	47



DNR photo by Jeff Martin

Proportion of Forested Land

Forests today cover 47% of Wisconsin. The area of forested land in Wisconsin was in decline prior to the first inventory in 1936 due to land conversion to pasture and cropland, which followed the extensive logging and widespread wildfires during the late nineteenth and early twentieth centuries. Conversion of forested land continued at a modest pace from 1936 until the 1960s. Since that time this trend has reversed, as marginal cropland and pasture land has reverted back to forest cover. Wisconsin now has more forested land than at any time since the forest inventories began in 1936. Sustainable management assures that these forests will remain healthy and productive for generations to come.

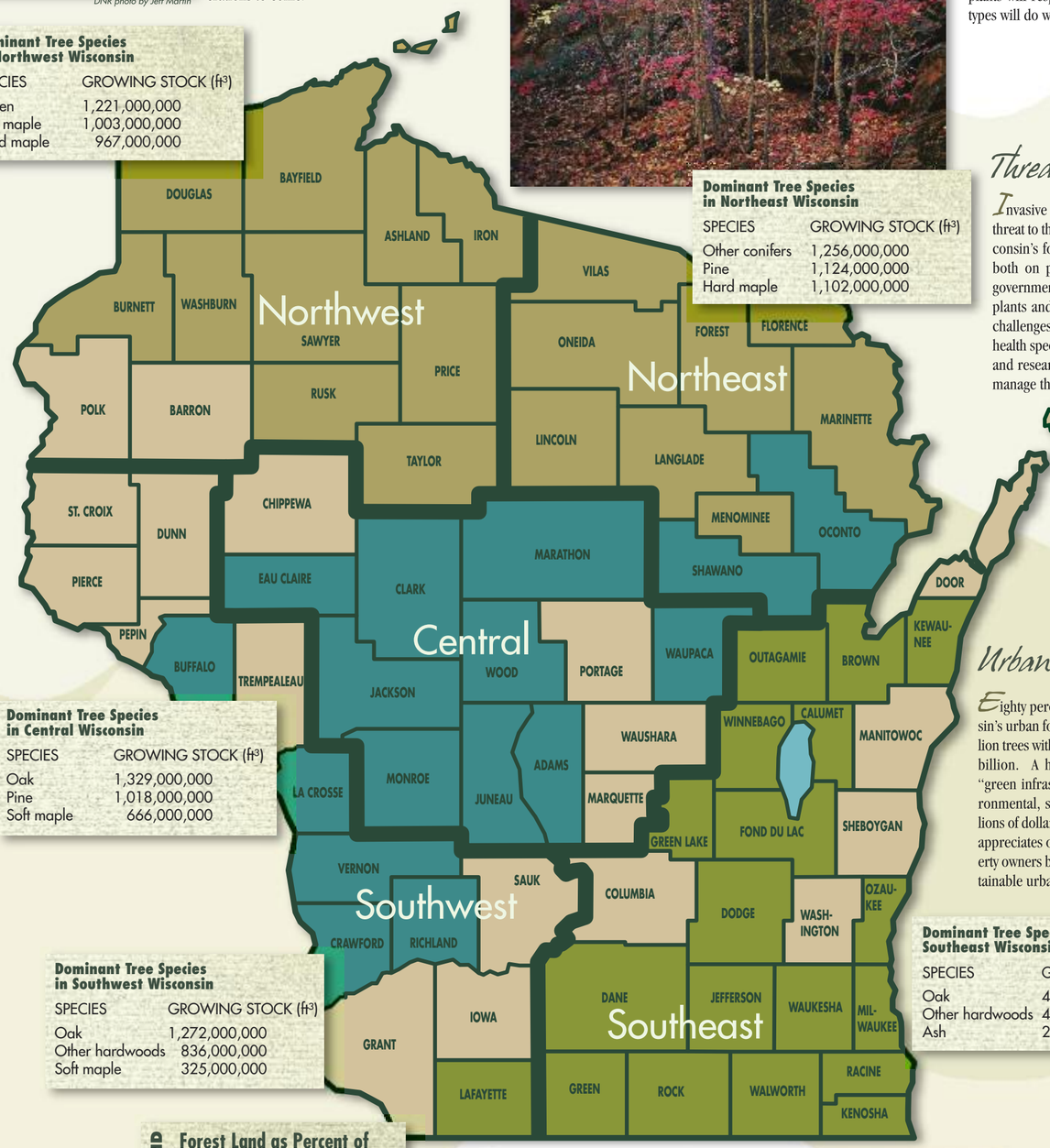


Dominant Tree Species in Northwest Wisconsin

SPECIES	GROWING STOCK (ft³)
Aspen	1,221,000,000
Soft maple	1,003,000,000
Hard maple	967,000,000

Dominant Tree Species in Northeast Wisconsin

SPECIES	GROWING STOCK (ft³)
Other conifers	1,256,000,000
Pine	1,124,000,000
Hard maple	1,102,000,000



Dominant Tree Species in Central Wisconsin

SPECIES	GROWING STOCK (ft³)
Oak	1,329,000,000
Pine	1,018,000,000
Soft maple	666,000,000

Dominant Tree Species in Southwest Wisconsin

SPECIES	GROWING STOCK (ft³)
Oak	1,272,000,000
Other hardwoods	836,000,000
Soft maple	325,000,000

Dominant Tree Species in Southeast Wisconsin

SPECIES	GROWING STOCK (ft³)
Oak	407,000,000
Other hardwoods	462,000,000
Ash	251,000,000

MAP LEGEND

Forest Land as Percent of Total Land by County

- 0.0 to 19.9
- 20.0 to 39.9
- 40.0 to 59.9
- 60.0 to 100

Forest Capability

The land that supports the forests of Wisconsin is quite diverse. Ranging from nutrient poor and dry sands that can support only a few hardy tree species, to rich and moist soils that can support a wide range of tree and other plant species, the land base has a major effect on what grows where and what species will be successful against their competitors.

A system has been developed to differentiate the range of capability on sites across the state. This habitat type classification system helps predict how the current forest will change over time, how the forest trees and plants will respond to different kinds of management, and what forest types will do well under different conditions.

Understory plants help the forester classify a particular site so they can determine how various forest communities will grow there.

DNR photo by Jeff Martin

Threats to Wisconsin's Forests

Invasive species may pose the greatest threat to the long-term sustainability of Wisconsin's forests in rural and urban areas, both on privately-owned properties and government-managed lands. These pests, plants and other diseases present unique challenges for property owners and forest health specialists, but through partnerships and research they are finding new ways to manage the ever-changing forest.

FOREST FACT

Some Common Invasive Species in Wisconsin

PESTS	PLANTS
Emerald ash borer	Garlic mustard
Gypsy moth	Buckthorn (common and glossy)
Asian longhorned beetle	Reed canary grass
	Bush honeysuckle

Some Common Plant Diseases in Wisconsin

Annosum root rot
Oak wilt
Beech bark disease

The invasive emerald ash borer was discovered in Wisconsin in 2008 and threatens the fate of the state's 727 million ash trees.

Courtesy of www.forestryimages.org

Forest Mortality

Wisconsin's forests are continuously changing and growing. However, part of nature's management of the forest ecosystem includes the death of individual trees. Death is most often associated with severe weather, flooding, insect infestations and diseases caused by fungi. Though we tend to think of death in a negative context, it is necessary for a sustainable forest. Dead trees create habitat for wildlife, return nutrients to the soil and open space for new growth. While natural mortality can be positive, increased rates of tree death from invasive exotic diseases or insects can have dramatic and often negative impacts on our forests.

FOREST FACT

- For each of the 5.6 million residents of Wisconsin, there are more than 1,900 trees larger than 10 feet tall. In a typical year, 8 of these trees are harvested and 153 die of natural causes. At the same time 187 new trees grow to be over 10 feet tall.
- If current trends continue, we can expect a net increase of 26 more trees for each resident of Wisconsin for a total of over 145 million trees each year!

Growth vs. Removals

Net annual growth (total growth minus mortality) continues to exceed annual removals. In 2007, approximately 59% of Wisconsin's annual forest growth was harvested.

FOREST FACT

1936-2007 Growth and Removal of Trees

YEAR	ANNUAL GROWTH (ft³)	ANNUAL REMOVALS (ft³)
1936	250,000,000	190,000,000
1956	300,000,000	180,000,000
1968	500,000,000	230,000,000
1983	490,000,000	240,000,000
1996	490,000,000	330,000,000
2007	590,000,000	350,000,000

Urban Forests

Eighty percent of state residents live within Wisconsin's urban forests. These forests contain over 27 million trees with an estimated replacement value of $10.9 billion. A healthy urban tree canopy functions as "green infrastructure", providing communities environmental, social and economic services worth millions of dollars. Unlike "gray infrastructure", this value appreciates over time. Communities and private property owners both have a critical role in managing a sustainable urban forest.

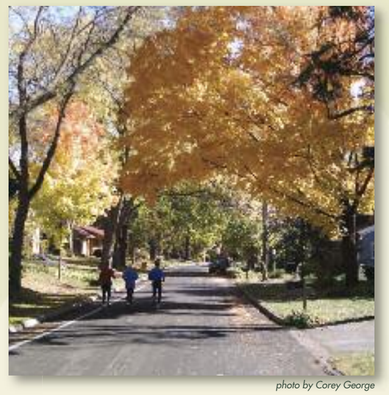


photo by Corey George

DNR photo by Jeff Martin

Wildfire

Fire can be both an important management tool as well as a threat to Wisconsin forests. Every year, thousands of wildfires occur, destroying homes, property and natural resources. Wisconsin has a very effective and efficient program for preventing, detecting and suppressing wildfires.

DNR photo

Most wildfires in Wisconsin occur in the spring (March, April and May) when snow-cover has disappeared, winds are strong and humidity is low. People who are careless in the outdoors cause nearly all Wisconsin wildfires.

FOREST FACT

What is the number one cause of wildfires?

Debris Burning	33%
Miscellaneous (fireworks, improper ash disposal, power lines, children playing with matches, etc.)	25%
Equipment Use	17%
Arson	11%
Railroads	4%
Campfires	4%
Smoking	3%
Lightning	3%

All data is based on a 10-year average (1998-2007) reported in DNR Protection Areas.

DNR photo by Paul Pingrey

The Future of our Forests

The benefits of Wisconsin's forests – clean air and water, plant and animal habitat, outdoor recreation, beauty and economic benefits of a strong forest products industry – are enjoyed by everyone. To ensure that these forests are protected and managed to meet the needs of future generations, it is important to educate ourselves, our children and our grandchildren about the many values of Wisconsin's forests. Trees have played an important role in our society throughout history, and with proper, sustainable management, they will continue this role into the future.

DNR photo by Jeff Roe